

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

MANUFACTURE OF INCANDESCING ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 275,612, dated April 10, 1883.

Application filed October 20, 1882. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in the Manufacture of Incandescing Electric Lamps, (Case No. 491,) of which the following is a specification.

In the manufacture of flexible carbon filaments for use as the incandescing conductors of electric lamps, it is usual to first carbonize the organic fibers from which such filaments are formed, and afterward place them within the lamp-globes, which are then exhausted and sealed off. In this process more or less time must elapse before a carbon filament is placed in its globe. During this time, as carbon is very susceptible to moisture, the filament may absorb a certain amount of moisture from the atmosphere, which may injure it to some extent.

The object I have in view is to remedy this difficulty, and I accomplish this by dipping the filament, after carbonization, in a strong solution of carbonizable material until it becomes coated and its pores become impregnated with such material. The filament is then dried and attached to the leading-in wires, when it is ready to be incorporated into the lamp. After the filament is placed in the lamp such lamp is exhausted of air, preferably by means of a Sprengel vacuum-pump, and during the latter portion of this process of exhaustion, after a nearly complete vacuum is attained, the filament is heated to incandescence by an electric current. This results in the carbonization of the deposited carbonizable material, and a homogeneous flexible carbon filament of high resistance is produced. After the lamp is exhausted to as nearly complete a vacuum as possible it is hermetically sealed by the fusion of the glass. During the time which inter-

venes between the preparation of a filament and its incorporation into the lamp its surface is covered with the carbonizable substance, and it therefore does not absorb the atmospheric moisture, as it otherwise might. By carbonizing this substance by the heat of an electric current in a vacuum where a minimum of oxygen is present such carbonization is more completely accomplished, the volatile portions being more readily driven off. I prefer to dip the carbonized filaments in a solution of sugar, though many other carbonizable materials may be employed, such as camphor, anthracene, shellac, or substances analogous to these. The substance used is dissolved in its proper solvent and the filament dipped in this solution.

What I claim is—

1. The process of preparing the incandescing conductors of electric lamps, consisting in first carbonizing filaments of the desired material, then soaking the same in a solution of carbonizable material, and then carbonizing the whole in a vacuum, substantially as set forth.

2. The process of manufacturing incandescing electric lamps, consisting in carbonizing a filament of proper material, soaking said filament in a solution of carbonizable material, placing said filament in the lamp-globe, exhausting the air from said globe, the filament being heated to incandescence during the latter portion of the exhausting process, and finally hermetically sealing the globe, substantially as set forth.

This specification signed and witnessed this 14th day of October, 1882.

THOS. A. EDISON.

Witnesses:

H. W. SEELY,
RICHD. N. DYER.